Demand Access Service
(DAS)

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TDRSS

Presentee: ULDBP

Introduction

- Provide to TDRSS customers the ability to access Multiple Access Forward and Return services without prior scheduling

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Project Description

- **Background:** Future customers of Multiple Access (MA) Services on TDRSS will be small spacecraft with simple operations. These customers may not desire the current Space Network (SN) data and scheduling interfaces.
- **Purpose:** Design a system that allows customers of the SN to use the MA services on demand via TCP/IP.
  - Specifically, in its final implementation, provide an interface to customers to allow standard connectivity to request MA forward services, by means such as email, ftp, and web pages. MA return services would be provided continuously via TCP/IP regardless of customer's spacecraft position or transmission status.
- **Approach:** Phase in a system into the SN that allows this service.
  - Initial Phase: Proof of Concept
  - Phase I: Return Link Demand Access Service
  - Phase II: Forward Link Demand Access Service
  - Phase II: Return and Forward DAS at Guam Remote Ground Terminal

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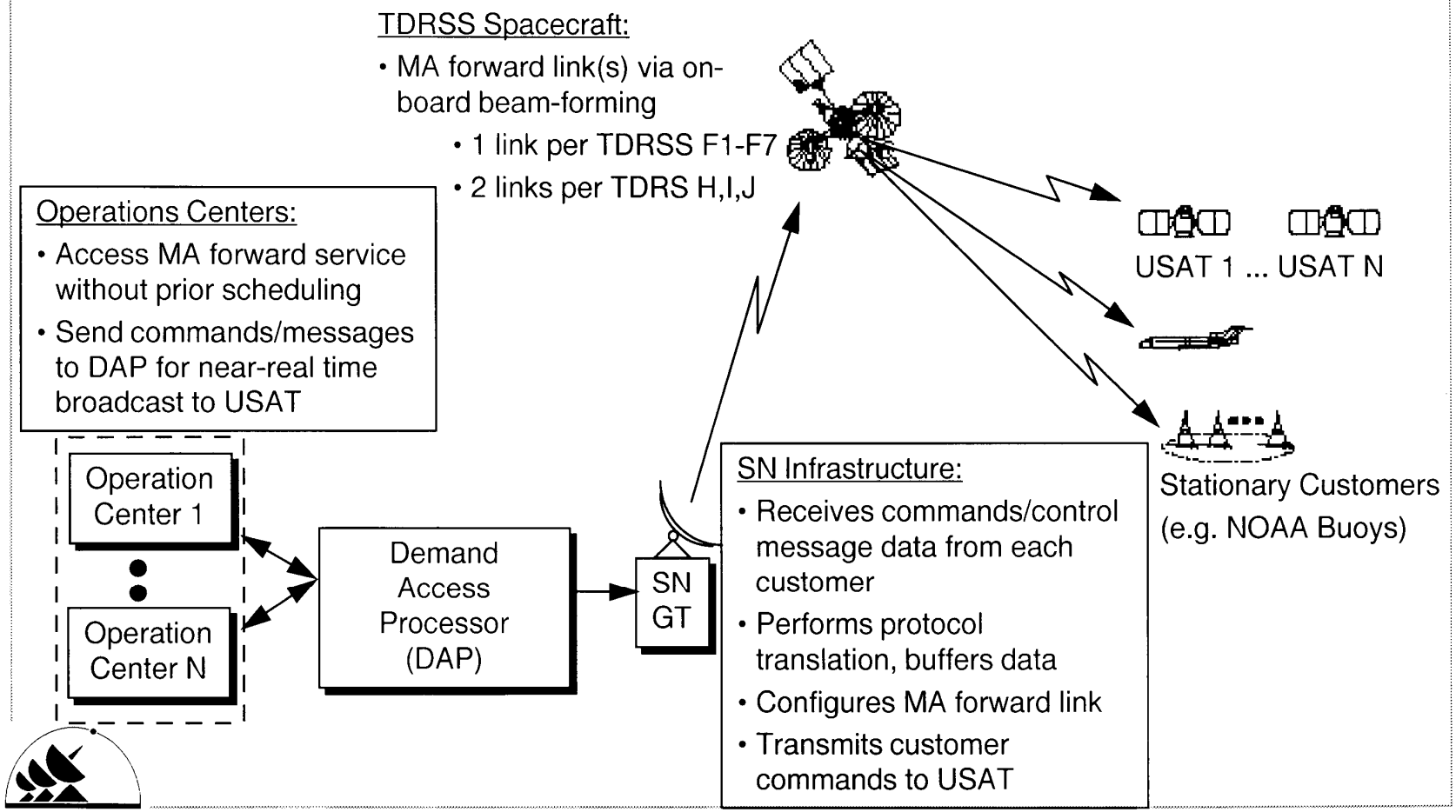
MA Forward Demand Access Service Concept



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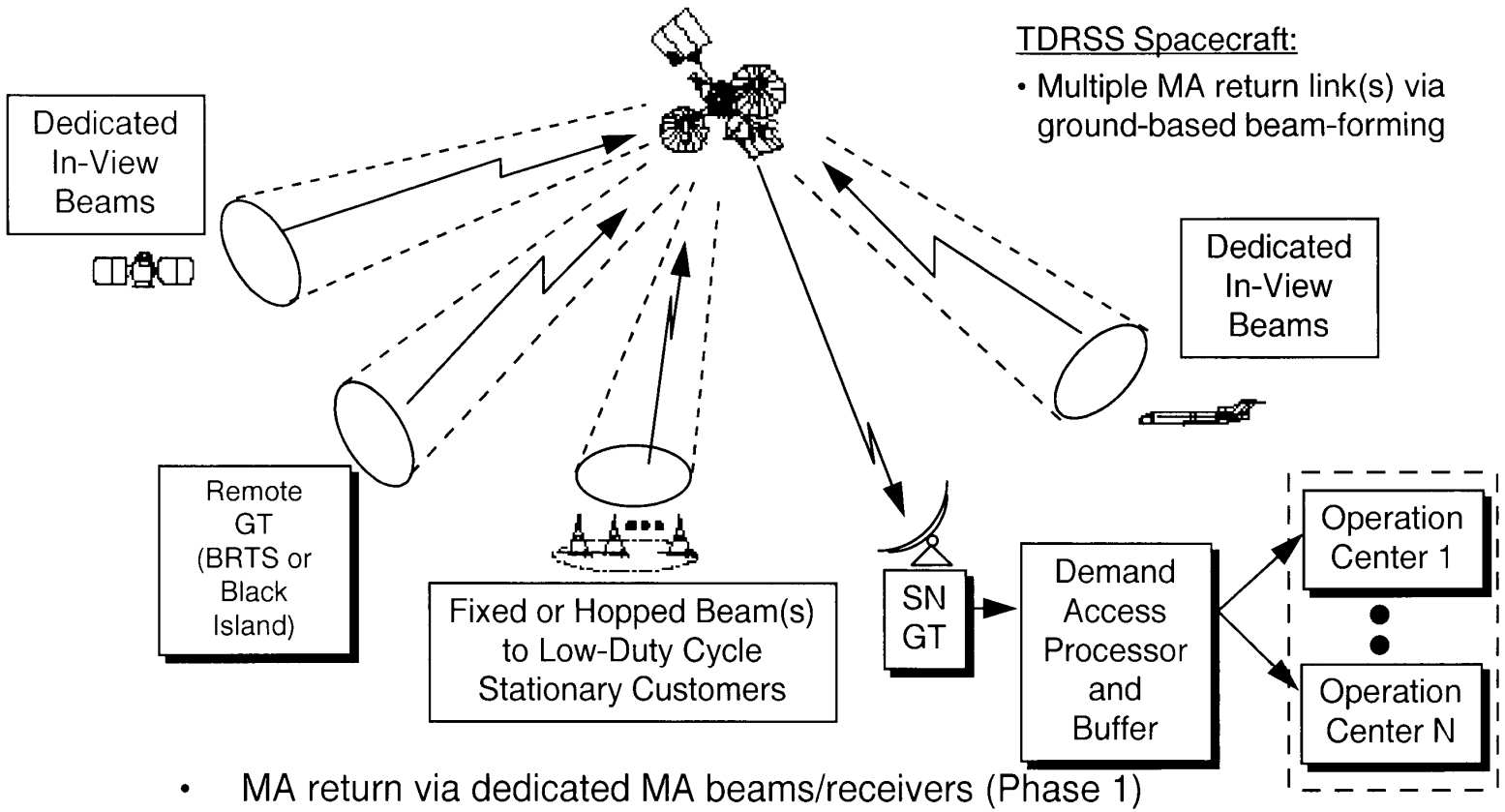
MA Return Demand Access Service Concept



- MA return via dedicated MA beams/receivers (Phase 1)
- Support to stationary customers via shared beams
- Beamformer/receiver capacity can grow to accommodate increased usage

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Proposed System Specifications Initial Phase

- Customer requests forward and return service via DAP
- DAP I/F is web page, email, or FTP
- Share MA resources with previously scheduled customers
- Utilize TDRS East, TDRS West & TDRS Spare
- DAP will schedule service via NCC, using TDRSS Unscheduled Time information to select windows of opportunity
- Minimum 6 minutes delay until service start (Ground Terminal constraint)
- Communicate via TCP/IP

Operations Concept Initial Phase

Multiple Access Forward and Return Service

1. Customer selects service (utilizing TCP/IP protocol) via Demand Access Processor (DAP)
2. Customer sends spacecraft command (MAF, buffer option only), vectors, USERID
3. DAP returns message to indicate the earliest time service can begin
4. Customer has option to cancel service
5. MAF: Customer notified when command shall be sent (non-buffered) or is being sent (buffered)

   MAR: Customer notified when return data starts
6. MAF: Customer notified when transmission of command from DAP is complete

   MAR: Customer notified when service is over

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Phase I, II, III

- Phase I
  - Multiple Access Return (MAR) Service
    - Dedicated return service
    - Request for service not needed, no sharing with scheduled customers
    - Telemetry sent directly to customer MOC via TCP/IP
    - Data buffered at WSC, if desired
    - No coverage over Zone of Exclusion
    - Operational by 9/99

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Phase I, II, III (cont)

- Phase II
  - Integrate forward with return services on demand
  - Complete by 12/99
- Phase III
  - Implement at Guam Remote Ground Terminal
  - Eliminates ZOE
  - Complete by 9/00

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Summary

- Phased implementation
- Initial Phase scheduled for completion late 1997.
- System will evolve as new customers desire access
- Concepts/architectures/project status will be constantly updated on DAS home-page
  - "http://www530.gsfc.nasa.gov/das"

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